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pH Control—Why the Concern?

DEPARTMENT OF HEALTH
AND HUMAN SERVICES
Public Health Service
Food and Drug Administration
Bureau of Foods (HFF-326)

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—ABOUT THIS BOOKLET—

This booklet explains why the food processing employee must be concerned with properly controlling the acidification and determining the pH of foods. It covers these subjects in three sections:

(1) "The Importance of pH in Acidified Food Processing"

Defines pH in non-technical language, alerts employee to problems of inadequate pH control, and, finally, stresses the key role the employee plays in helping to assure the production of safe, quality foods.

(2) "Regulatory and Technical Information on Acidified Foods"

Summarizes pertinent FDA regulations and information pertaining to the processing of acidified foods.

(3) "pH Measurement Precautions"

Contains a list of specific reminders to consider when taking pH measurements.

To obtain additional copies of this booklet or an 11 in. x 14 in. poster of "pH Measurement Precautions," see page 8.

For further FDA information and regulations on acidified foods, low-acid canned foods and general food processing, see page 8.

The Importance of pH in Acidified Food Processing

You've Read About It In The Papers You've Seen It On TV

You know the stories to which we are referring. That's right, the ones about companies having to recall their food products.

Some plants have been forced to cease distribution of their acidified foods in interstate commerce because of poor pH control of their acidified products.

What Do These Problems Have To Do With You?

The answer is PLENTY if you work with foods that have to be *acidified*.

You can, if you are not careful, make the same mistakes as those plants.

If you do, the foods your plant produces will have to be *recalled*.

What is pH?

The pH of a food is the measure of that product's *acidity* or *alkalinity*.

Your taste can recognize major differences in the pH of various foods. An acid product would taste sour. An alkaline product would taste bitter.

This range in flavor is due to what is called the hydrogen ion concentration in the food.

The more hydrogen ions present, the more acid the food and the *lower* the pH.

If your company processes foods the same as, or similar to those illustrated, extra care must be exercised to maintain their appropriate pH. Inadequate control of the pH can result in the growth of undesirable bacteria in the product that could be a potential health hazard to an unsuspecting consumer.

You wouldn't want your firm's customer's to eat a toxic product.

What Can You Do?

You must see to it that all of the critical requirements for the manufacture and processing of your firm's foods are followed.

This means observing:

- *Good Manufacturing Practices* (food production requirements covering such areas as equipment, sanitation, warehousing, and distribution)
- *Effective Monitoring of Processing Procedures*
  If you are in charge of monitoring the pH of the products your company produces, you must make sure that the foods meet the criteria specified in the scheduled process. This is of vital importance in helping your plant produce safe, toxin-free products.

READEX FICHE

Regulatory & Technical Information About Acidified Foods

Acidified Foods

The Federal Regulations define acidified foods as those low-acid foods which have had their pH reduced to 4.6 or lower by the addition of acids or acid foods. Vinegar or any safe and suitable organic acid or acid food can be used for this purpose.

Acidification

Acidification is one means of preserving food products. In addition to preventing bacteria growth, acidification helps maintain a desired product quality. Puddings, cucumbers, artichokes, cauliflower, peppers and fish are examples of low-acid foods which are normally acidified.

The addition of an acid or an acid food to such products is a method of preservation which is designed to prevent bacteria of public health significance from growing. If acidification is not adequately controlled at a pH of 4.6 or below, *Clostridium botulinum*, a toxin-producing micro-organism, can grow in the food.

Clostridium Botulinum

C. botulinum is almost universally present. It is capable of producing a potent toxin which affects the nervous system. A person who has consumed this toxin will become extremely ill and may even die.

C. botulinum will grow and produce this toxin in foods which are packaged in the absence of oxygen, have a favorable pH and temperature, and contain water and nutrients necessary for its growth. Low-acid canned foods provide this favorable environment.

When a product is acidified to a pH of 4.6 or less, according to the Good Manufacturing Practices, inhibition of the growth of *C. botulinum* is assured.

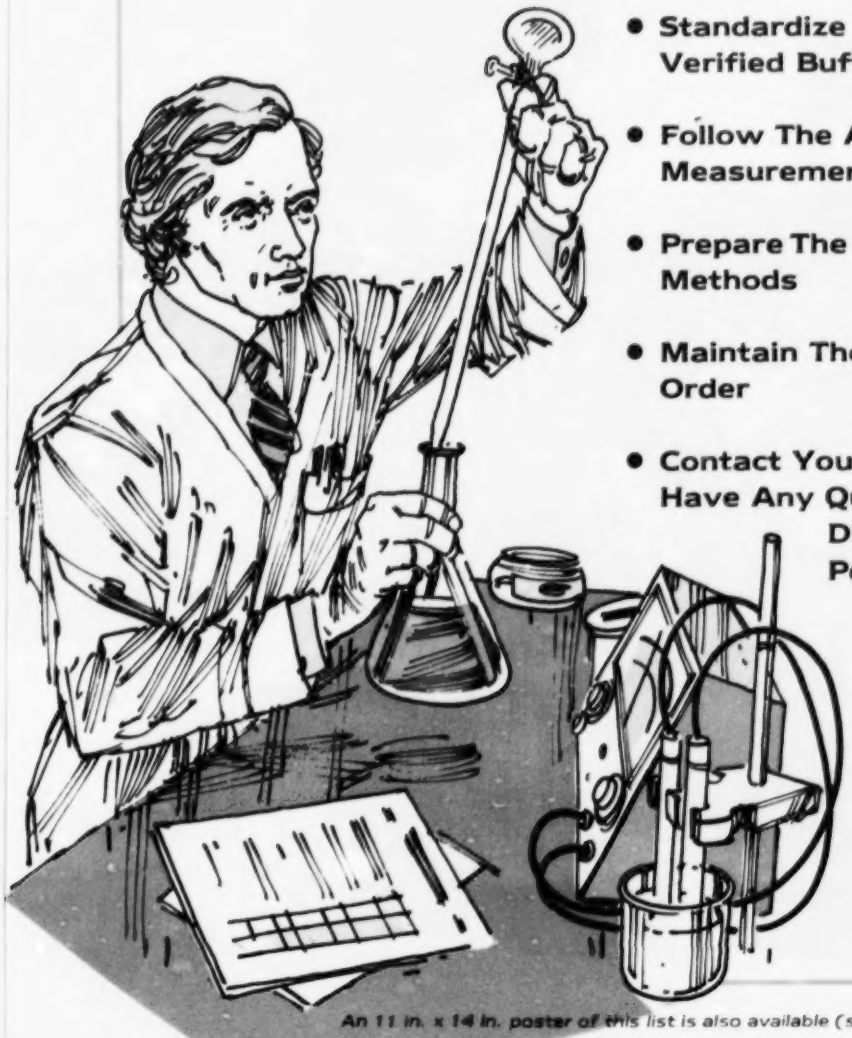
Personnel Qualifications

All operating personnel concerned with the acidification of foods must be under the supervision of a person who has attended a school approved by the Commissioner of the Food and Drug Administration. This school will have presented instructions on pH and the critical factors to be considered in the acidification of foods.

pH Measurement Precautions

When you measure the pH of your company's raw materials, in-process goods, or finished products, you should take the following precautions:

- **Follow The Manufacturer's Instruction Manual That Comes With The pH Meter When Analyzing a Product**
- **Standardize The pH Meter Using A Reliable Verified Buffer Solution**
- **Follow The Accepted Procedure For pH Measurement**
- **Prepare The Sample According To Prescribed Methods**
- **Maintain The pH Meter In Perfect Working Order**
- **Contact Your Immediate Supervisor If You Have Any Questions, Unexplained Difference, Or Difficulties In Performing The Test**



An 11 in. x 14 in. poster of this list is also available (see page 8 for ordering information)

"Your Control Of
Acidification & pH
Makes The
Difference In The
Safety Of Your
Company's Product.
This Can Mean
Your Job, Too!"

Additional Copies

Single copies of this booklet are available free from the:

Industry Programs Branch, HFF-326
Food and Drug Administration
200 C Street, S.W.
Washington, D.C. 20204

Use order form (1) on inside back cover.

Multiple copies of this booklet are available only from the Government Printing Office. Use order form (2) on inside back cover.

An 11 in. x 14 in. poster of the "pH Measurement Precautions," listed on page 6 of this booklet, is also available.

Use order form (1) or (2) depending on single or multiple copy requests.

Additional Information on Acidified Foods, Low-Acid Canned Foods, And General Food Regulations

- Current Good Manufacturing Practice (GMP) In Manufacturing, Processing, Packing or Holding of Human Foods, Part 110 (21 CFR).
- Emergency Permit Controls and Current Good Manufacturing Practices for Acidified Foods and Low-Acid Canned Foods in Hermetically Sealed Containers, Parts 108, 113, 114 (21 CFR).
- Federal Food, Drug, and Cosmetic Act, As Amended, October 1976.
- Requirements of the Laws & Regulations Enforced by the U.S. Food and Drug Administration.
- Fair Packaging and Labeling Act.
- FDA's Catalog of Information Materials for the Food and Cosmetic Industries.

Single copies of the above publications are available from:

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